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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/820,313	03/29/2001	Nagayuki Takao	0152-0555P	1864

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EXAMINER

SHOSHO, CALLIE E

ART UNIT PAPER NUMBER

1714

DATE MAILED: 01/29/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/820,313

Applicant(s)

TAKAO ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. All outstanding rejections except for those described below are overcome by applicants' amendment filed 11/18/02.

In light of the new grounds of rejection set forth in paragraphs 5-6 below with respect to the rejection of record as well as the use of new reference against the present claims, namely, Ikeda et al. (U.S. 5,952,429), the following rejection is non-final.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 8-9, 13-15, and 18-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ikeda et al. (U.S. 5,952,429).

Ikeda et al. disclose ink jet ink comprising organic solvent such as hexane, toluene, xylene, etc and colorant which is carbon black attached to silicone graft copolymer. The colorant is obtained by polymerizing polymerizable monomer in the presence of polysiloxane macromonomer in the presence of silicone oil. The polymerizable monomers include (meth)acrylic acid and hydroxyalkyl (meth)acrylamide. The carbon black has particle size of 0.0005 – 0.5 μm while the colorant has particle size of 0.001-0.5 μm . Thus, it is clear that the particle size of the silicone graft copolymer overlaps that presently claimed. The molecular

weight of the silicone graft copolymer is 5000-100,000 while the molecular weight of the graft portion is 5,000-50,000. The ratio of silicone graft copolymer to carbon black present in the colorant is 1-1000:100. The ink comprises 100 parts solvent per 100 parts carbon black (col.12, lines 23-26, col.16, lines 53-60, col.20, lines 41-49, col.22, lines 24-28 and 33-38, col.23, lines 56-63, col.24, lines 28-37, col.30, lines 8-9 and 32-67, col.34, lines 17-34, col.43, lines 24-28, col.44, lines 7-12, col.48, lines 31-45, col.54, lines 38-46, and col.55, lines 25-29 and 60-65). Although there is no explicit disclosure of the viscosity of the ink, given that the ink is used in ink jet printing as presently claimed and given that the ink contains the same ingredients as presently claimed, it is clear that the ink would inherently possess viscosity as presently claimed.

In light of the above, it is clear that Ikeda et al. anticipate the present claims.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-4, 6-11, 13-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsubuko et al. (U.S. 5,952,048) in view of Ryntz et al. (U.S. 4,673,718).

The disclosure is adequately set forth in paragraph 9 of the office action mailed 6/25/02, Paper. No.6, and is incorporated here by reference.

It is further noted that with respect to claim 10, while Ryntz et al. disclose that the silicone graft polymer is obtained from acidic groups such as (meth)acrylic acid, there is no disclosure of the acid number of the polymer. However, one of ordinary skill in the art would have recognized

that the acid number effects waterfastness, solubility, and fixation properties of both the graft copolymer and the ink. Therefore, it would have been obvious to one of ordinary skill in the art to control the acid number of the silicone graft copolymer of Ryntz et al., i.e. by controlling the type and amount of monomers used to obtain the polymer, to values, including those presently claimed, in order to produce an ink with desired waterfastness and fixation properties, and thereby arrive at the claimed invention.

6. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsubuko et al. in view of Ryntz et al. as applied to claims 1-4, 6-11, 13-20, and 22 above, and further in view of Zahrobsky et al. (U.S. 5,936,027).

The difference between Tsubuko et al. in view of Ryntz et al. and the present claimed invention is the requirement in the claims of additives.

Zahrobsky et al., which is drawn to non-aqueous inks, disclose the use of additives to enhance the adhesion of the ink to substrate (i.e. binder) and to control wetting (col.4, lines 54-61).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to include additives in the ink of Tsubuko et al. in order to enhance ink properties, and thereby arrive at the claimed invention.

7. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (U.S. 5,952,429).

The disclosure with respect to Ikeda et al. in paragraph 3 above is incorporated here by reference.

The difference between Ikeda et al. and the present claimed invention is the requirement in the claims of the acid number, amine number, and hydroxyl number of the silicone graft copolymer.

Ikeda et al. disclose silicone graft copolymer which is obtained from monomers that include carboxylic acid groups, amino groups, and hydroxyl groups, however, there is no disclosure of the acid number, amine number, and hydroxyl number of the graft copolymer.

However, one of ordinary skill in the art would have recognized that the acid number, amine number, and hydroxyl number effect the waterfastness, solubility, and fixation properties of both the graft copolymer and the ink. Therefore, absent evidence to the contrary, it would have been obvious to one of ordinary skill in the art to control the acid number, amine number, and hydroxyl number of the silicone graft copolymer of Ikeda et al., i.e. by controlling the type and amount of monomers used to obtain the polymer, to values, including those presently claimed, in order to produce an ink with desired properties, and thereby arrive at the claimed invention.

Response to Arguments

8. Applicants' arguments filed 11/18/02 have been fully considered but they are not persuasive.

Specifically, applicants argue that Tsubuko et al. is not a relevant reference against the present claims given that since the silicone resin of Tsubuko et al. is prepared from such a large

amount of silicone compound, the resin will not adsorb onto the surface of the pigment but rather dissolve in a solvent.

However, it is noted that Tsubuko et al. disclose two silicon resins. One is used to treat the surface of the pigment (see col.6, lines 55-58 and claim 4) and the other is used to improve the dispersability, charge control, and image fixing performance of the ink and is added in addition to the pigment (see col.6, lines 59-63, example 4, and claim 5). The resin referred to by applicants is an example of the later type of silicon resin which is not used by Tsubuko et al. to treat the pigment.

For use in treating the pigment, Tsubuko et al. broadly disclose the use of silicon-containing resin which is why Tsubuko et al. is used in combination with Ryntz et al. which teaches the use of specific type of silicon resin, i.e. graft copolymer as presently claimed.

Thus, it is the examiner's position that Tsubuko et al. remains a relevant reference against the present claims.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

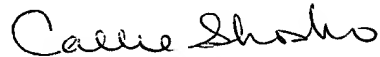
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Callie E. Shosho
Examiner
Art Unit 1714

CS
January 22, 2003